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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,412	12/05/2003	Robert P. Kusy	5470-286DV	9571

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MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627

EXAMINER

BUTLER, PATRICK

ART UNIT	PAPER NUMBER
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1791

MAIL DATE	DELIVERY MODE
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10/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/729,412

Applicant(s)

KUSY ET AL.

Examiner

Patrick Butler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-20,42 and 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-20,42 and 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of Group II, Claims 8-20, in the reply filed on 17 July 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains: Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 9, 14-18, 20, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernyhough et al. (US Patent No. 5,700,417).

With respect to Claims 8 and 42, Fernyhough teaches pultruding glass fiber roving through a resin bath, curing it (continuously pultruding a fiber-reinforced plastic article to form a fiber-reinforced plastic article having a first partial cured state) (see col. 1, lines 39-44; col. 4, lines 63-65), and winding it on a winder (continuously shaping the first fiber-reinforced plastic particle having the first partially cured state into a spirally wound shape) (see col. 1, lines 39-44; drawing). The winding would occur in a spiral since it would occur at an initial point and lap spirally out. Fernyhough teaches incremental curing of the product during the radiation exposure (see col. 1, lines 48-65 and col. 5, lines 13-18).

Fernyhough discloses the claimed invention except for arranging the duplicate cure step after winding to fully cure (see col. 5, lines 13-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the duplicate cure step after winding to fully cure, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. *In re Einstein*, 8 USPQ 167.

With respect to Claim 9, Fernyhough teaches reshaping the rod from straight to curved by winding it on a winder (wherein the shaping step comprises a step of molding the fiber-reinforced plastic article on a rotatable mold) (see col. 1, lines 39-44; drawing).

With respect to Claim 14, Fernyhough teaches sending the coated roving under a UV lamps at a set speed (see col. 7, lines 54 and 55), which would necessarily apply energy at a substantially constant rate per length.

With respect to Claims 15 and 43, Fernyhough teaches that suitable energy sources for curing include electromagnetic radiation, which would input energy (see col. 1, lines 48-65).

With respect to Claim 16, Fernyhough considers UV and visible radiation to be unlike microwave and IR radiation because microwave and IR radiation have to be converted to thermal energy (see col. 1, lines 47-65). Thus, Fernyhough considers UV and visible radiation to be thermal energy.

With respect to Claim 17, Fernyhough teaches that the pultruding pulls coated glass fiber through a die to determine its shape and cures it (the pultruding step comprises the steps of shaping an uncured fiber-reinforced plastic; and curing the

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uncured fiber-reinforced plastic article to form the fiber-reinforced plastic article having a first partially cured state) (see col. 1, lines 39-44; col. 4, lines 63-65).

With respect to Claim 18, Fernyhough teaches using multiple energy lamps, and each lamp is a type of energy (wherein the step of curing the uncured fiber-reinforced plastic article comprises inputting a first type of energy into the uncured fiber-reinforced plastic article, and wherein the step of curing the fiber-reinforced plastic article having the first partially cured state comprises inputting a second type of energy into the fiber-reinforced plastic article having the first partially cured state) (see figure).

With respect to Claim 20, Fernyhough teaches using visible or UV radiation in the multiple lamps (see figure; col. 1, lines 47-65). As visible and UV radiation spectrums overlap, the teaching of visible radiation necessarily includes application of some UV radiation. Similarly, the teaching of UV radiation necessarily includes application of some visible radiation.

Claims 10–14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernyhough et al. (US Patent No. 5,700,417) as applied to Claims 8, 9, and 17 above and further in view of Schäper (US Patent No. 4,464,121).

With respect to Claims 10 and 12, Fernyhough teaches a method of making a spirally wound fiber-reinforced plastic article having a second cured state as previously described. However, Fernyhough does not expressly teach drawing the fiber-reinforced plastic article having the first partially cured state through a die having a cross-section to form a fiber reinforced plastic article having the first partially cured state and having substantially said cross-section.

Schäper teaches drawing a fiber-reinforced plastic between the spiral grooves of a stator and rotor to form the cross-sectional profile of the strand (drawing the fiber-reinforced plastic article having the first partially cured state through a die having a cross-section to form a fiber reinforced plastic article having the first partially cured state and having substantially said cross-section) (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Schäper's shaping spiral grooves with Fernyhough's process in order to form a spring with small tolerances of the shape (see Schäper, abstract).

With respect to Claims 11 and 13, Schäper's rotatable mold's spiral grove is part of the die (see abstract). Within the die, the fiber-reinforced plastic is hardened (cured) (see col. 3, lines 53-59). Since the fiber-reinforced plastic is curved (molded) and cured while it is drawing though the die, the steps occur contemporaneously.

With respect to Claim 14, Schäper teaches putting energy into the fiber-reinforced plastic article (see col. 3, lines 53-59) but does not appear to explicitly teach that the ratio of the energy input per unit length of the fiber-reinforced plastic article is within the claimed range (e.g., substantially constant).

However, in this regard, Schäper teaches adapting the speed of running the strand through, the resin employed, and the process temperature to each other (see col. 3, lines 53-59). As such, Schäper recognizes that that the ratio of the energy input per unit length of the fiber-reinforced plastic article is a result-effective variable. Since that the ratio of the energy input per unit length of the fiber-reinforced plastic article is a

result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum that the ratio of the energy input per unit length of the fiber-reinforced plastic article applied in the process of Schäper through routine experimentation based upon adapting the process variables cited above—the speed of running the strand through, the resin employed, and the process temperature.

With respect to Claim 16, Schäper teaches curing with thermal energy (see col. 3, lines 53-59).

With respect to Claims 18 and 19, as combined references, Fernyhough teaches UV radiation of the uncured fiber-reinforced plastic article (see col. 1, lines 39-44), and Schäper teaches thermal energy of the fiber-reinforced plastic article having the first partially cured state (see col. 3, lines 53-59). The UV and thermal energies are two types of applied energy.

Response to Arguments

Applicant's arguments filed 17 July 2007 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC 112 rejections. Applicant's arguments appear to be on the grounds that:

1) Applicant's amendments to the Claims have overcome the 35 USC 112 rejections.

Applicant argues with respect to the 35 USC 102 rejections. Applicant's arguments appear to be on the grounds that:

2) Claim 8, as amended, requires partial cure after winding, which is not provided by Fernyhough.

3) The additional claims are not anticipated and are not obvious given their dependency from Claim 8.

The Applicant's arguments are addressed as follows:

1) In view of Applicant's amendment of Claims 9, 10, and 12, the Examiner withdraws the previously set forth 35 U.S.C. 112, second paragraph, rejection as detailed in the Claim Rejections - 35 U.S.C. 112 rejection section of the Office Action dated 19 March 2007.

2 and 3) Applicant's arguments with respect to claim 8's amended limitation of specific order have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mon.-Thu. 7:30 a.m.-5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Patrick Butler
Assistant Examiner
Art Unit 1792



CHRISTINA JOHNSON
SUPERVISORY PATENT EXAMINER